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# Exploring Strategies to Enhance the Presentation of Information in Print DTCA to Improve Consumers' Recall of Information

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# Exploring Strategies to Enhance the Presentation of Information in Print DTCA to Improve Consumers' Recall of Information

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**Abstract**
*This study examines how best to present information in an antidepressant print DTCA. The objectives of this study are to: (1) modify an antidepressant print advertisement to enhance consumers' understanding of the presented information, (2) create a questionnaire to measure consumers' recall of the information presented in an antidepressant print advertisement and (3) pilot test the study instruments by comparing consumers' recall of the information in the antidepressant print advertisement between those who view the original advertisement and those who view the modified advertisement. Modifications of the advertisement were based on the Explanatory Structure Building Model, findings from previous studies, and literature pertaining to the enhancement of the readability and comprehension of written health information. Data collection was conducted in three stages using mixed methods. This study details potential techniques that can be used to enhance the presentation of information in print DTCA in order to improve consumers' recall of the information. Furthermore, this study shows that strategies to improve the presentation of information in print DTCA exist and that the strategies are feasible to apply.*

**Keywords:** Direct-to-consumer advertisement, Information presentation, Information recall

## Introduction

Prevalence of direct-to-consumer advertising (DTCA), or "pharmaceutical-company sponsored advertising of prescription medicines that directly targets consumers via the mass media"[1] has increased remarkably. As pharmaceutical companies increased the use of DTCA, debates about potential benefits and risks of DTCA to the public and the health care system intensified. Proponents of DTCA state that the advertisements provide consumers with valuable educational information that can bring financial and health related benefits.[2,3] Opponents of DTCA state that the advertisements provide consumers with incomplete and biased information that may generate unnecessary visits and inappropriate requests for medications.[1,3] In the midst of these debates, the Food and Drug Administration (FDA) created guidelines to regulate DTCA. Within the guidelines, the presentation of a fair balance between benefit and risk information in DTCA is considered to be a fundamental component because the FDA believes that consumers are more likely able to make informed and conscious evaluations and decisions when they are presented with both sides of the information.[4,5]

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While presenting both the benefit and risk information is regarded as one of the important regulations, how the information is presented to consumers should be considered. Even though both benefit and risk information are present in DTCA, as the FDA guideline requires, they are presented differently.[6] Benefit information is more likely to be presented in larger font sizes[7,8] and usually requires lower readability skills.[9] Therefore, it is simple for consumers to read, understand, and form their own gist about the benefit information. On the other hand, risk information is usually presented in smaller font sizes that can be easily ignored,[10] composed of long lists where it is difficult to recognize clinically important and unimportant information,[11] and is often missing key pieces of information such as numeric descriptors for the incidence level of each side effect.[6] The format in which risk information is presented makes it overwhelming for consumers to comprehend.[12] Therefore, due to the differences in how the benefit and risk information are presented, how much of the benefit and risk information consumers are able to comprehend and process is questionable.

More specific to the reading level required to understand the benefit and risk information in DTCA, previous research indicates that the literacy level required to understand the main text body of DTCA (where most of the benefit information is presented) is at a high-school reading level and the brief summary section (where most of the risk information is presented) is at a college reading level.[10] However, according to the National Assessment of Adult Literacy (NAAL), 36% of

America's adult population has a basic or below basic health literacy level; health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions".[13] When considering that more than one-third of the adult US population has a basic or below basic health literacy level, DTCA information presented in a high-school or college reading level can be challenging for the average consumers to process and understand. The educational value of DTCA, as the proponents stress, is at stake if consumers are challenged with understanding the presented information. Therefore, to enhance the educational value of DTCA, a study that examines how best to present both benefit and risk information in DTCA to ensure that consumers with a basic health literacy level are able to read and comprehend the information is necessary.

**Objective**

The objectives of this study are to: (1) modify an antidepressant print advertisement to enhance consumers' understanding of the presented information, (2) create a questionnaire to measure consumers' recall of the information presented in an antidepressant print advertisement and (3) pilot test the study instruments by comparing consumers' recall of the information in the antidepressant print advertisement between those who view the original advertisement and those who view the modified advertisement.

**Methods**

Mixed methods were used to conduct the study. One-on-one, semi-structured interviews as well as focus group interviews were conducted to evaluate the modifications made to the original advertisement. For the pilot study, an experimental design was used to compare consumers' recall of information between those who view the original advertisement and those who view the modified advertisement.

*Advertisement Selection*

Antidepressants are one of the most prescribed drugs in the U.S.[14] and they are among the top 10 heavily advertised classes of medications.[15] In order to explore a medical condition that DTCA targets frequently, antidepressants were selected as the drug category for the study. More specifically, a DTCA for Pristiq (Desvenlafaxine), an antidepressant, was selected for this study (Figure 1).

*Advertisement Modification*

The modification of the advertisement was based on the Explanatory Structure Building (ESB) Model, findings from previous studies, and literature pertaining to the enhancement of the readability and comprehension of written health information.

ESB model proposed by Yaros (2006) suggests methods to enhance readers' interest in and comprehension of complex scientific news messages. The ESB model posits "readers with little or no expertise in science and technology will express more interest in the content when the content is structured for readers' general world knowledge".[16] The model suggests two methods to simplify scientific messages: (1) organize the messages and (2) use familiar terminologies. First, when organizing the sequence of the message, it is suggested that instead of placing the most recent news first, recent news should be mixed with historical and contextual information, which increases readers' familiarity with the message. Second, when referring to scientific terminologies, more generally known words should be used, and when it is necessary to use scientific terms, explanation of those terms' meanings should be provided. In this study, ESB model was used to simplify the information contained in the advertisement by (1) rearranging the paragraphs following the model's suggestions and (2) replacing scientific terms with more generally known words. When it was necessary to use scientific terms, explanation was provided.

Techniques identified for improving the readability and comprehension of written health information from previous studies were also incorporated in modifying the advertisement. The techniques were: (1) Use simple plain language.[17-22] Using plain language includes avoiding jargon and technical/medical words and using familiar words; however, when it is necessary to use technical/medical words, they must be defined. (2) Keep sentences short – no more than 8 to 10 words.[17-19,21,23] (3) Keep paragraphs short – no more than 10 lines.[19] (4) Use the active voice.[19,21] (5) Focus on key information and clearly state desired action and behavior.[17,19,21] (6) Use header and bullets to organize information.[19,21,22] (7) Use necessary visual images but avoid decorating the page.[17,18,21,22,24] (8) Use at least 12-point font.[18,21,22] (9) Avoid all capital letters, italics, and nontraditional fonts.[18,22] (10) Leave plenty of white space around margins and between sections.[21]

A graphic design artist aided with the modification of the format and presentation of the information in the advertisement. Overall, the modified advertisement used simple plain language by avoiding technical/medical words; was constructed with sentences that have 10 or fewer words; contained paragraphs with fewer than 10 lines; used the active voice; used headers, bullets, and table boxes to organize information; used at least 12-point font; and contained written information at or below an eighth grade reading level. In order to conduct the modifications, a one-page advertisement was expanded to a two-page advertisement (Figure 2). The back of the advertisement, where detailed side effect information is located, was not modified for the study. A registered pharmacist reviewed the modified advertisement to ensure all

written information in the modified advertisement was correctly reworded to have the equivalent meaning as the original advertisement. In addition, a regulatory affairs professional reviewed the modified advertisement for its compliance with federal regulations for drug advertising.

*Readability Measure*

Readability formulas are designed to provide an estimate of a written passage's reading grade level.[25] A number of readability formulas exist such as Simple Measure of Gobbledygook (SMOG), Suitability Assessment of Materials (SAM), Flesch-Kincaid Grade level, and Gunning-Fogg Index.[25] Researchers recommend using the SMOG to examine the reading levels of health related materials due to its high correlations with different readability formulas (i.e., accuracy), widespread use, simple directions and speed of use.[25] For this study, to assess the readability level of the original and the modified print advertisement, the SMOG readability formula was used. SMOG readability formula showed that the original advertisement was at an eleventh grade reading level and the modified advertisement was at or below an eighth grade reading level.

*Creation of Recall of Information Questionnaire*

Ten true-false and 10 multiple-choice questions were developed to assess participants' recall of the information presented in the advertisement (Appendix A). Previous studies that assessed recall of information in DTCA[26,27,28] were used as guidance. The questions were designed to be applicable to both the original and modified advertisements.

*Data Collection: Stages of Testing*

Once the modified advertisement and the recall of information questionnaire were created, three stages of testing were conducted. During the first stage, evaluation of the modifications made to the original advertisement was conducted. Furthermore, suggestions and comments were collected from the participants for additional refinement of the modified advertisement and the recall of information questionnaire. The second stage was conducted to make finer adjustments to both the modified advertisement and the questionnaire. In addition, consumers' recall of the information between those who viewed the original advertisement and those who viewed the modified advertisement was explored. As this study was a preparation for a larger experimental design study, last stage of testing was conducted to assess the feasibility of implementing the full study as well as to confirm that no additional modifications were necessary to both the modified advertisement and the recall of information questionnaire. The three stages of testing were exempted from the Social and Behavioral Sciences Institutional Review Board at the University of Wisconsin-Madison.

*Stages of Testing - Stage 1*

After the first version of the modified advertisement (Figure 2) and the recall of information questionnaire (Appendix A) were created, one-on-one, semi-structured interviews were conducted with six participants. Participants were selected through convenience sampling. All participants were asked to read both the original and the modified version of the advertisement then select an advertisement that they thought was easier to read and understand. Next, they were asked open-ended questions regarding the layout and content of the two advertisements. Examples of the open-ended questions are: "For what reasons do you find it easier to read and understand? Please explain as many reasons as you would like.", "How can we make the advertisement that you picked even more easier to read and understand?" and "What suggestions do you have for the headings of each section?". Afterward, participants were asked to answer ten questions pertaining to the information presented in the advertisements while reading the questions out loud and thinking out loud. Three participants answered ten true/false questions and the other three participants answered ten multiple-choice questions. Each interview lasted approximately 30 minutes. All interviews were audio-recorded for accurate analysis. Suggestions and comments provided by the participants were discussed among the researchers and the graphic designer. Modifications to the advertisement and the questionnaire were conducted based on the suggestions and comments.

*Stages of Testing- Stage 2*

The second stage of the study utilized modified advertisement and recall of information questionnaire that resulted from stage 1. It was conducted with 18 participants selected through convenience sampling. The participants were first year undergraduate students at a large university in the Midwest enrolled in the Diversity, Health, and Healthcare course. The 18 participants were randomly assigned to read either the original advertisement or the modified advertisement; nine participants were assigned to each group. The two groups were placed in separate rooms. A teaching assistant for the course guided the original advertisement group and the researcher guided the modified advertisement group. The procedure for the two groups was equivalent. Participants were given up to six minutes to read the advertisement. Afterward, they were asked to answer 20 questions (10 true-false and 10 multiple-choice questions) pertaining to the information presented in the advertisement without having access to the advertisement. Participants were told to mark their answers on their own copies of the questionnaire. After the administration of the questionnaire, the advertisement was provided back to the participants and each group participated in a focus group. For the group that read the original advertisement, the modified version of the advertisement was provided along with the original version. The focus group was used to assess

participants' reactions to the advertisements and the recall of information questionnaire. Also, it was used to gather additional suggestions about ways to improve the modified advertisement and the questionnaire. Examples of questions asked are: "What can we do to improve the questions?", "What can we do to make the advertisement easier for consumers to read and understand?" and "What terminologies did you have a hard time understanding?". The whole process took approximately 30 minutes. Suggestions and comments provided by the participants were discussed among the researchers and the graphic designer. Independent sample t-tests were used to compare consumers' recall of information between those who viewed the original advertisement and those who viewed the modified advertisement.

*Stages of Testing - Stage 3*

The last stage of the study utilized modified advertisement and recall of information questionnaire that resulted from stage 2. It was conducted with four participants. Participants were selected through convenience sampling. Two participants read the original advertisement and the other two read the modified advertisement. All four participants answered the same survey questionnaire to measure their recall of information. The survey was self-administered.

**Results**

*Study - Stage 1*

Participant characteristics for stage 1 of the study are summarized in Table 1. Among the six participants, five participants stated that the modified advertisement was easier to read and understand due to the following reasons: (1) larger font size, (2) categorization of information using clear headers and bullets, (3) formatting: plenty of white space making it easier on the eyes, (4) usage of easy to read language, and (5) aesthetically more attractive. Only one participant preferred the original advertisement. This participant explained that the original advertisement was more preferable due to the fact that it had "less information to process" and it "does not go into as much details" as the modified advertisement.

When asked for suggestions on how to improve the modified advertisement to be even more easier to read and understand, participants stated: (1) revise the wording of the headers "Problems with Other Drugs", "Other Health Concerns" and "Other Safety Information", participants commented that the word "Other" made it confusing, (2) use a bigger font or bold the headers of each section, (3) shorten the bulleted points under "Problems with Other Drugs" and "Other Health Concerns", (4) differentiate the FDA and Pristiq contact information at the bottom of the advertisement, (5) break up information in the "Suicidality and Antidepressant Drugs" box into three separate paragraphs and (6) make drug name logo "Pristiq" stand out more.

Above suggestions were taken into consideration in creating the second version of the modified advertisement. For the second version, following modifications were conducted: (1) Headings were modified - "Problems with Other Drugs" was changed to "Potential Drug Interactions", "Other Health Concerns" was changed to "Health Concerns", and "Other Safety Information" was changed to "Safety Information". (2) For the suggestion on making the headers of each section more visible using bold or bigger fonts, the background purple color was lightened so the headings would become more prominent without altering the font. (3) The bulleted points under each heading were shortened under a direction of a licensed pharmacist. (4) For the contact information, since the purpose of providing the FDA contact information was for consumers to report negative side effects, FDA contact information was placed under the heading "Most Common Side Effects". Only Pristiq contact information remained in the white space. (5) The information inside the "Suicidality and Antidepressant Drugs" box was separated into three different paragraphs while keeping the wording consistent with the original advertisement. Although participants wanted the drug name logo "Pristiq" to stand out more by using a larger font, this adjustment was not conducted. This was due to the fact that the goal of advertisement modification for this study was to enhance consumers' understanding of the presented information by reorganizing and rewording the presented information while keeping the content, graphics and color schemes consistent with the original advertisement. The second version of the modified advertisement can be found in Figure 3.

For the recall of information questionnaire, participants suggested: (1) rewording statements/questions to be more lucid, (2) for the multiple-choice questions, keeping consistency in how questions are asked (for example, either use or do not use an interrogative word throughout the multiple-choice section) and (3) having more variability in the answer choice for question 1 in the multiple-choice section – participants were not clear about the difference between choice b. bipolar disorder and choice c. depression. Revisions to the recall of information questionnaire were conducted to incorporate the suggestions. In the true and false question section, statements for questions 4, 5, 7, 8, 9 and 10 were reworded for clarification. For example, question 7 was revised from "It DOESN'T matter if you stop taking Pristiq anytime you want without talking to your doctor" to "If you want to stop taking Pristiq, you should talk to your doctor before stopping your dose." In the multiple-choice section, questions 6, 8 and 9 were revised to not use interrogative words. For example, question 6 was revised from "What should be monitored while taking Pristiq?" to "_____ should be monitored while taking Pristiq." Lastly, answer choices for the question "Pristiq is a drug to treat _____." was revised from "a. high cholesterol, *b. bipolar*

*disorder*, c. depression, d. high blood pressure, and e. cannot remember" to "a. high cholesterol, *b. asthma*, c. depression, d. high blood pressure, and e. cannot remember". Revised version of the questionnaire can be found in Appendix B.

*Study – Stage 2*

Participant characteristics for stage 2 of the study are summarized in Table 1. For suggestions on modifying the advertisement, participants stated the following: (1) move the Pristiq logo to the top and enlarge it, (2) move the 'Suicidality and Antidepressant Drugs' box to the bottom of the page while breaking up the information in the box into smaller paragraphs, (3) bold the last sentence, "PRISTIQ is not approved for use in children under 18", in the 'Suicidality and Antidepressant Drugs' box and (4) for the statement, "Pristiq works on two chemicals on the brain", name the two chemicals and explain what they are in lay terms. For the recall of information questionnaire, both focus groups thought the wording was easy to understand and further revision was not necessary.

The above suggestions were considered, but to fulfill the purposes of the study and to meet the legal requirements, further modifications incorporating the new suggestions were not conducted. As stated previously, the purpose of this study was to reorganize and reword the presented information while keeping the content, graphics and color scheme consistent with the original advertisement. Therefore, moving or modifying the Pristiq logo (suggestion 1) and adding new information about the two chemicals (suggestion 4) was inappropriate for the study. In addition, to maintain the legal requirements, additional changes to the 'Suicidality and Antidepressant Drugs' box were not conducted (suggestions 2 and 3).

For pilot testing of the recall of information questionnaire, information recall scores for each group (original advertisement group and modified advertisement group) can be found in Tables 2 and 3. Comparing the information recall scores between the two groups, the modified advertisement group had significantly higher score compared to the original advertisement group. The original advertisement group had a mean score of 15.89 with a standard deviation of 1.36 whereas the modified advertisement group had a mean score of 18.56 with a standard deviation of 1.24 (p-value = 0.001)

*Study – Stage 3*

The last stage of testing preceded smoothly, supporting the feasibility of conducting the full study. Furthermore, participants had no additional comments or suggestions for the advertisement modification or the recall of information questionnaire.

**Discussion**

This study was conducted in order to create a modified advertisement that could enhance consumers' understanding of the information contained in an antidepressant print DTCA and to create a questionnaire that could assess consumers' recall of the presented information in the DTCA. Furthermore, pilot test was conducted to examine the information recall scores between those who viewed the original advertisement and those who viewed the modified advertisement.

*Advertisement Modification*

When viewing the modified advertisement, participants frequently stated that the advertisement was in a format that made them actually read the advertisement rather than simply glimpse through it. They also noted that compared to advertisements they have seen in other magazines, the modified advertisement was presented and organized in a way that was easier to read and easier on eyes which allowed them to read the front page of the advertisement entirely. Participants' reactions coincide with findings from previous studies. Previously, researchers found that consumers preferred information in DTCA to be organized in boxes and believed that information organized in boxes was easy to read and understand.[28,29] This contradicts the rationale of one participant who preferred the original advertisement. This participant stated that the original advertisement was easier to read due to the reasons that the advertisement had "less information to process" and it "does not go into as much details" compared to the modified advertisement. However, the original and modified advertisements had equal amount of information and equal depth of information. Information was only reorganized and reworded to enhance consumers' comprehension. It could have been that the participant thought there was less information due to the method used in presenting the information in the original advertisement. The original advertisement did not organize information into various boxes; information was presented in one long paragraph. This format could have made the participant to glimpse through the information rather than read and process the information. For pharmaceutical companies to market their products, perhaps this is what pharmaceutical companies want consumers to do. They may want consumers to obtain the basic information (indication for the drug) but glimpse over the information regarding side effects. Furthermore, even though both benefit and risk information is presented in DTCA, this could be why the opponents of DTCA state that the advertisements provide consumers with incomplete and biased information that generate unnecessary visits and inappropriate requests for medications.[1,3]

*Recall of Information Questionnaire*

For the true-false question section, participants suggested clarifying statements so that it would be lucid. For example, few

commented that the statement "It DOESN'T matter if you stop taking Pristiq anytime you want without talking to your doctor." was not lucid due to the fact that it had three negative words (doesn't, stop, and without) in one sentence. Considering the comment, this statement was modified to "If you want to stop taking Pristiq, you should talk to your doctor before stopping your dose", this statement was revised to omit the words "doesn't" and "without". Another example of confusion created by negative wording was with statement, "You can take Pristiq while nursing WITHOUT letting your doctor know." This statement was changed to "If you're nursing, you should let your doctor know before taking Pristiq." After conducting these revisions, participants did not present any confusion about understanding the statements.

For the multiple-choice question section, majority of the participants suggested keeping a consistency in how questions are asked. Originally, among the 10 multiple-choice questions, 4 questions used interrogative words such as what, who, and when in asking the questions and 6 questions asked participants to choose words to fill in the blanks to complete the sentences. Participants commented that more time was needed to gain understanding of what to do to answer the questions due to the inconsistency in asking questions. Perhaps participants were frustrated that it was taking them longer to understand the question than to answer the question. Considering this comment, all multiple-choice questions were revised to keep consistency in how questions are asked. Questions in the multiple-choice section of the questionnaire were revised to have only one instruction. The instruction was "Please select the best answer for each of the blanks below. If you cannot remember the answer, please select 'e' for cannot remember."

In overall, participants appreciated having the answer category of "cannot remember" in both true-false and multiple-choice sections of the comprehension questionnaire. Participants commented that by having this answer category, it prevented them from guessing the answer when they did not know the answer.

*Pilot Testing – Information Recall Scores*

Differences were observed for the recall of information scores between those who viewed the original advertisement and those who viewed the modified advertisement. Participants who viewed the modified version of the advertisement had a higher information recall score compared to participants who viewed the original version of the advertisement. The difference was detectable even with small sample sizes selected from a homogenous group.

Since this was a pilot study, the results obtained here can be used to calculate the sample size for a larger experimental study. From this study, the effect size came out to be 0.9. When type 1 error is set a 0.05 and power is set at 0.80, minimum number of 40 participants in total (20 participants per group) would be needed for the full study. However, consideration should be given since the participants who partook in this portion of the study were college students. Perhaps more conservative effect size should be utilized in calculating the sample size for the full study.

*Planned Future Study*

The advertisement used in this study promoted an antidepressant medication. Therefore, patient population in which depression is a common condition will be identified for participation for the future full study. A larger sample size will be utilized to examine whether the techniques used to modify the advertisement is successful in enhancing consumers' recall of both the benefit and risk information presented in this print DTCA. In addition, to examine whether the modifications made to the DTCA is successful in enhancing recall of the information particularly among participants with basic or below basic health literacy level, participants' health literacy level will be assessed using the Short Test of Functional Health Literacy in Adults (S-TOFHLA). The S-TOFHLA measures an individual's comprehension of written material rather than only her/his ability to read and correctly pronounce a list of words.[30] The original Test of Functional Health Literacy in Adults (TOFHLA) takes up to 22 minutes to administer; this may cause respondent fatigue. To overcome this barrier, the S-TOFHLA was developed; S-TOFHLA takes 7 minutes to administer.[30,31] Therefore, S-TOFHLA will be used for the full study to moderate participants' total participation time.

**Conclusion**

The presentation of a fair balance between benefit and risk information is considered to be a fundamental part of the FDA's guideline for DTCA. However, it is still apparent that benefit and risk information is presented differently in DTCA. This study details potential techniques that can be used to enhance the presentation of information in print DTCA in order to improve consumers' recall of the information. This study validates that strategies to improve the presentation of information in print DTCA exist and that the strategies are feasible to apply.

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**Appendix A**

First version of the Comprehension Questionnaire

**Please answer true, false, or cannot remember to each of the questions below.**

| ITEMS | True | False | Cannot Remember |
|---|---|---|---|
| 1. You can only buy Pristiq with a prescription. | | | |
| 2. Anyone with depression can take Pristiq. | | | |
| 3. Pristiq is approved for use in children under 18. | | | |
| 4. Taking Pristiq can make you sweat. | | | |
| 5. Taking Pristiq can increase your appetite. | | | |
| 6. Pristiq does NOT make any other health conditions worse. | | | |
| 7. It DOESN'T matter if you stop taking Pristiq anytime you want without talking to your doctor. | | | |
| 8. Antidepressants can increase suicidal thoughts and behaviors in children only. | | | |
| 9. If you are interested in taking Pristiq and you take aspirin on regular basis, you should let your doctor know. | | | |
| 10. You can take Pristiq while nursing WITHOUT letting your doctor know. | | | |

**Please select the best answer for each of the questions below.**

1. Pristiq is a drug to treat
    a. high cholesterol
    b. bipolar disorder
    c. depression
    d. high blood pressure
    e. cannot remember

2. Pristiq is a(n)
    a. herbal medication
    b. prescription medication
    c. over-the-counter medication
    d. dietary supplement
    e. cannot remember

3. Common side effects of Pristiq do not include
    a. nausea
    b. dizziness
    c. constipation
    d. increased appetite
    e. cannot remember

4. You should not take Pristiq if you are taking
    a. Monoamine Oxidase Inhibitor (MAOI)
    b. allergy medications
    c. asthma medications
    d. vitamin supplements
    e. cannot remember

5. Antidepressants can increase suicidal thoughts and behaviors in
    a. pregnant women
    b. adults over age 65
    c. tobacco users
    d. children, teens, and young adults
    e. cannot remember

6. What should be monitored while taking Pristiq?
    a. body temperature
    b. blood pressure
    c. blood sugar level
    d. heart rate
    e. cannot remember

7. Pristiq works in
    a. the lungs
    b. the heart
    c. the brain
    d. the muscles
    e. cannot remember

8. Who should not use Pristiq?
    a. children under age 18
    b. women above age 65
    c. men above age 65
    d. tobacco users
    e. cannot remember

9. When you are taking Pristiq, what should you avoid doing?
    a. take vitamin supplement
    b. drink alcohol
    c. use tobacco products
    d. exercise
    e. cannot remember

10. If you are planning to take Pristiq, you should tell your health care professional about the following except
    a. if you have high blood pressure
    b. if you have heart problems
    c. if you are nursing
    d. if you have asthma
    e. cannot remember

**Appendix B**

Second (final) version of the Comprehension Questionnaire

**Please answer true, false, or cannot remember to each of the questions below.**

| ITEMS | True | False | Cannot Remember |
|---|---|---|---|
| 1. You can only buy Pristiq with a prescription. | | | |
| 2. Anyone with depression can take Pristiq. | | | |
| 3. Pristiq is approved for use in children under 18. | | | |
| 4. Side effects of Pristiq include sweating. | | | |
| 5. Side effects of Pristiq include increased appetite. | | | |
| 6. Pristiq does not make any other health conditions worse. | | | |
| 7. If you want to stop taking Pristiq, you should talk to your doctor before stopping your dose. | | | |
| 8. Antidepressants increase suicidal thoughts only in adults. | | | |
| 9. If you are interested in taking Pristiq and you take aspirin on regular basis, you should talk to your doctor about it. | | | |
| 10. If you're nursing, you should let your doctor know before taking Pristiq. | | | |

**Please select the best answer for each of the blanks below. If you cannot remember the answer, please select 'e' for cannot remember.**

1. Pristiq is a drug to treat _____.
   a. high cholesterol
   b. asthma
   c. depression
   d. high blood pressure
   e. cannot remember

2. Pristiq is a(n) _____.
   a. herbal medication
   b. prescription medication
   c. over-the-counter medication
   d. dietary supplement
   e. cannot remember

3. Common side effects of Pristiq do **not** include _____.
   a. nausea
   b. dizziness
   c. constipation
   d. increased appetite
   e. cannot remember

4. You should **not** take Pristiq if you are taking _____.
   a. Monoamine Oxidase Inhibitor (MAOI)
   b. allergy medications
   c. asthma medications
   d. vitamin supplements
   e. cannot remember

5. Antidepressants can increase suicidal thoughts in _____.
   a. pregnant women
   b. adults over age 65
   c. tobacco users
   d. children, teens, and young adults
   e. cannot remember

6. _____ should be monitored while taking Pristiq.
   a. Body temperature
   b. Blood pressure
   c. Blood sugar level
   d. Heart rate
   e. cannot remember

7. Pristiq works in _____.
   a. the lungs
   b. the heart
   c. the brain
   d. the muscles
   e. cannot remember

8. _____ should **not** use Pristiq.
   a. Children under age 18
   b. Women above age 65
   c. Men above age 65
   d. Tobacco users
   e. cannot remember

9. When you are taking Pristiq, you should **avoid** _____.
   a. taking vitamin supplements
   b. drinking alcohol
   c. using tobacco products
   d. exercising
   e. cannot remember

10. If you are planning to take Pristiq, you should tell your health care provider about the following **except** _____.
   a. if you have high blood pressure
   b. if you have heart problems
   c. if you are nursing
   d. if you have asthma
   e. cannot remember

**Figure 1**

One-page original Pristiq print advertisement from 2010 (size: approximately 27.5cm by 20cm)

**Figures 2**
First version of modified two-page print advertisement for Pristiq
(size: approximately 27.5cm by 41cm)

**Figures 3**
Second/final version of modified two-page print advertisement for Pristiq
(size: approximately 27.5cm by 41cm)

**Table 1**
Participant Characteristics (Stage 1 Participant n=6; Stage 2 Participant n = 18)

| Characteristics | Stage 1 Participant Characteristics n (%) | Stage 2 Participant Characteristics n (%) |
|---|---|---|
| Mean age | 28 | 18 |
| Gender | | |
| Female | 5 (83.3) | 16 (88.9) |
| Male | 1 (16.7) | 2 (11.1) |
| Race | | |
| Asian | 2 (33.3) | 0 |
| Hispanic/Latino | 2 (33.3) | 0 |
| White | 2 (33.3) | 17 (94.4) |
| Unidentified | 0 | 1 (5.6) |
| Education completed | | |
| Associate degree | 1 (16.7) | |
| Bachelor degree | 3 (50) | Not Applicable* |
| Graduate degree | 2 (33.3) | |
| Use of Pristiq | | |
| Yes | 0 | 0 |
| No | 6 (100) | 18 (100) |
| Family/friend's use of Pristiq | | |
| Yes | 0 | 0 |
| No | 6 (100) | 18 (100) |
| Seen/Heard Pristiq Ad | | |
| Yes | 3 (50) | 8 (44.4) |
| No | 3 (50) | 10 (55.6) |

*All stage 2 participants were first year undergraduate students at a large university.

**Table 2**
Total score for the comprehension questionnaire from Stage 2 (n=18)

| Number of items correct | Group | |
|---|---|---|
| | Original Ad Group | Modified Ad Group |
| 14 | 2 | 0 |
| 15 | 1 | 0 |
| 16 | 3 | 0 |
| 17 | 2 | 2 |
| 18 | 1 | 3 |
| 19 | 0 | 1 |
| 20 | 0 | 3 |

**Table 3**
Comprehension score comparison (n=18)

| | Original Advertisement Mean score ± SD | Modified Advertisement Mean score ± SD | P-value |
|---|---|---|---|
| Comprehension Score | 15.89 ± 1.36 | 18.56 ± 1.24 | 0.001 |